



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2022-0156; Project Identifier AD-2021-01474-T; Amendment 39-22237; AD 2022-23-10]**

**RIN 2120-AA64**

#### **Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is superseding Airworthiness Directive (AD) 2021-06-03, which applied to all The Boeing Company Model 777F series airplanes. AD 2021-06-03 required deactivating the potable water system. This AD was prompted by a report of a water supply line that detached at a certain joint located above an electronic equipment (EE) cooling filter, leading to water intrusion into the forward EE bay. This AD retains the actions required by AD 2021-06-03 and requires installing a shroud to the water supply line in the forward cargo compartment, and performing a leak test of the potable water system. For certain airplanes, this AD also requires replacing tubes and hoses from the water supply line and installing a shroud to the water return line. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of March 5, 2021 (86 FR 12809, March 5, 2021).

**ADDRESSES:**

*AD Docket:* You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-0156; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

*Material Incorporated by Reference:*

- For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110 SK57, Seal Beach, CA 90740-5600; telephone 562 797 1717; website [myboeingfleet.com](https://myboeingfleet.com).

- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-0156.

**Examining the AD Docket**

You may examine the AD docket at [regulations.gov](https://www.regulations.gov) by searching for and locating Docket No. FAA-2022-0156; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West

Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Courtney Tuck, Aerospace Engineer, Cabin Safety and Environmental Systems Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3986; email: Courtney.K.Tuck@faa.gov.

**SUPPLEMENTARY INFORMATION:**

**Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2021-06-03, Amendment 39-21469 (86 FR 12809, March 5, 2021) (AD 2021-06-03). AD 2021-06-03 applied to all The Boeing Company Model 777F series airplanes. The NPRM published in the *Federal Register* on March 25, 2022 (87 FR 17035). The NPRM was prompted by the development of new actions that result in a need to modify AD 2021-06-03. AD 2021-06-03 was issued because of a report of a water supply line that detached at a certain joint located above an EE cooling filter, leading to water intrusion into the forward EE bay. In the NPRM, the FAA proposed to continue to require deactivating the potable water system. The NPRM also proposed to require installing a shroud to the water supply line in the forward cargo compartment, and performing a leak test of the potable water system. For certain airplanes, the NPRM also proposed to require replacing tubes and hoses from the water supply line and installing a shroud to the water return line. The FAA is issuing this AD to address water entering the EE cooling system via the cooling filter, which can affect multiple EE bay racks and line replaceable units (LRUs), resulting in loss of functionality or inaccurate output of critical electrical systems and possible loss of control of the airplane.

## **Discussion of Final Airworthiness Directive**

### **Comments**

The FAA received comments from the Air Line Pilots Association, International (ALPA), and an individual, who supported the NPRM without change.

The FAA received additional comments from three commenters, including Boeing, FedEx, and All Nippon Airways. The following presents the comments received on the NPRM and the FAA's response to each comment.

### **Request to Change the Affected Airplanes for Certain Requirements**

FedEx and Boeing requested that the FAA change the affected airplanes in paragraph (g)(2) of the proposed AD from "L/Ns [line numbers] 960 and subsequent." to "L/N 960 through L/N 1689." FedEx noted that the airplanes affected by paragraph (g)(2) of the proposed AD should reflect the effectivity of Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021. FedEx stated that if the affected airplanes are not revised, then the final rule will require Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021, to be accomplished on aircraft to which it is not effective. Boeing pointed out that the FAA has previously accepted this alternative method of compliance (AMOC) to AD 2021-06-03 for L/N(s) 1692 and on, which have incorporated Type Design Change PRR 62701 Part B.

The FAA agrees with the request for the reasons stated above. The FAA has changed paragraph (g)(2) of this AD from "L/Ns 960 and subsequent" to "L/N 960 through L/N 1689 inclusive."

### **Request to Change the Compliance Time of an Approved AMOC**

FedEx requested that the FAA allow the AMOC to AD 2021-06-03 that included Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, to remain valid for 24 months from the published date of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, in this AD. FedEx reasoned that the AMOC to AD 2021-06-03 will

expire earlier than actions specified in Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021, can reasonably be accomplished. All Nippon Airways requested that the AMOC to AD 2021-06-03 for Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, remain valid for 24 months from the effective date of this AD. All Nippon Airways contended that if this AD does not allow Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, to remain valid, certain airplanes will be grounded. All Nippon Airways also noted that if this AD continues to allow Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, as an AMOC to this AD, but without extending the compliance time, certain airplanes may be grounded due to the time needed to submit and validate the AMOC Notice to its local authority.

Alternatively, All Nippon Airways requested that this AD be issued after the expiration of the interim action of the AMOC to AD 2021-06-03 that includes Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021. All Nippon Airways contended that if this AD does not allow the AMOC that specifies Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, to remain valid, certain airplanes will be grounded for the reasons described above.

The FAA agrees with the intent behind the requests but cannot change the existing AMOC to provide this relief to operators. However, the FAA is considering issuing an amended AMOC that would extend the compliance time of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021. If this amended AMOC is issued, then it may extend the 24-month compliance time to align with the compliance time of Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021. The FAA has added paragraph (n)(4) of this AD to state that “AMOCs approved for AD 2021-06-03 are approved as AMOCs for the corresponding provisions of this AD.”

Additionally, the FAA does not agree to delay the issuance of this AD until after the expiration of the interim action of the AMOC to AD 2021-06-03 that includes Boeing

Alert Service Bulletin 777-38A0047, dated March 30, 2021. An AD is issued to correct an unsafe condition. The unsafe condition will be corrected using Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021. The FAA has not changed the AD in this regard.

### **Request to Reference the Optional Interim Action of AD 2021-06-03**

FedEx and Boeing requested that the FAA include a paragraph in this AD that allows for an optional interim action in accordance with Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021. FedEx and Boeing maintained that this AD should reference Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, which was included in an AMOC to AD 2021-06-03. FedEx noted that by including the interim action of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, in this final rule, the information will provide a more complete picture of the entire timeline for future reference.

The FAA agrees for the reasons provided. The FAA has previously approved the AMOC to AD 2021-06-03 regarding the installation of a temporary water line shroud in accordance with Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021. As a result, the FAA has added paragraph (l) of this AD, which allows the activation of the potable water system provided that installation of a shroud around the water supply line and gray water line, installation of a shroud around the water return line, and post-installation inspections and applicable corrective actions are done in accordance with Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021; and provided that the potable water system is deactivated within a certain compliance time., The FAA has also redesignated subsequent paragraphs accordingly. The FAA has also revised the Costs of Compliance section to include the cost estimates for this optional action.

## **Conclusion**

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

## **Related Service Information under 1 CFR Part 51**

The FAA reviewed Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021. This service information specifies procedures for replacing tubes and hoses from the water supply line and installing a shroud to the water supply and return lines in the forward cargo compartment and performing a leak test of the potable water system.

The FAA also reviewed Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021. This service information describes procedures for installing a shroud around the water supply line and gray water line at station (STA) 529 to STA 634 in the forward cargo compartment, installing a shroud around the water return line at STA 550 to STA 620 in the forward cargo compartment, post-installation inspection requirements (which, depending on the shroud location, include a detailed inspection for any evidence of a water leak and a general visual inspection to determine if the shroud is in serviceable condition), and corrective actions (which include doing applicable corrective actions and a leak test until no leak is detected, and doing applicable corrective actions to put the shroud back to serviceable condition).

This AD also requires Boeing Multi Operator Message MOM-MOM-21-0089-01B, dated February 26, 2021, which the Director of the Federal Register approved for incorporation by reference as of March 5, 2021 (86 FR 12809, March 5, 2021).

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

### Costs of Compliance

The FAA estimates that this AD affects 58 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

#### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Deactivation of potable water system (retained actions from AD 2021-06-03)	2 work-hours X \$85 per hour = \$170	\$0	\$170	\$9,860
Replace tubes and hoses, and install shroud (new action)	Up to 12 work-hours X \$85 per hour = Up to \$1,020	Up to \$1,850	Up to \$2,870	Up to \$166,460
Potable water system leak test (new action)	2 work-hours X \$85 per hour = \$170	\$0	\$170	\$9,860

#### Estimated costs for optional actions

Action	Labor cost	Parts cost	Cost per product
Install shrouds	Up to 2 work-hours X \$85 per hour = \$170	Up to \$1,380	Up to \$1,550
Post installation inspections	Up to 3 work-hours X \$85 per hour = \$255 per inspection cycle	\$0	Up to \$255 per inspection cycle
On-condition actions	Up to 11 work-hours X \$85 per hour = \$935	\$0	Up to \$935

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some or all of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.



## **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive (AD) 2021-06-03, Amendment 39-21469 (86 FR 12809, March 5, 2021); and

b. Adding the following new AD:

**2022-23-10 The Boeing Company:** Amendment 39-22237; Docket No. FAA-2022-0156; Project Identifier AD-2021-01474-T.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

This AD replaces AD 2021-06-03, Amendment 39-21469 (86 FR 12809, March 5, 2021) (AD 2021-06-03).

#### **(c) Applicability**

This AD applies to all The Boeing Company Model 777F series airplanes, certificated in any category.

#### **(d) Subject**

Air Transport Association (ATA) of America Code 38, Water/waste.

#### **(e) Unsafe Condition**

This AD was prompted by a report of a water supply line that detached at a certain joint located above an electronic equipment (EE) cooling filter, leading to water

intrusion into the forward EE bay. This AD was also prompted by the development of new actions to address the unsafe condition. The FAA is issuing this AD to address water entering the EE cooling system via the cooling filter, which can affect multiple EE bay racks and line replaceable units (LRUs), resulting in loss of functionality or inaccurate output of critical electrical systems and possible loss of control of the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Retained Deactivation of Potable Water System, With No Changes**

This paragraph restates the requirements of paragraph (g) of AD 2021-06-03, with no changes. For the airplanes identified in paragraphs (g)(1) and (2) of this AD: Within 5 days after March 5, 2021 (the effective date of AD 2021-06-03), deactivate the potable water system, in accordance with Boeing Multi Operator Message MOM-MOM-21-0089-01B, dated February 26, 2021 (Boeing MOM-MOM-21-0089-01B).

(1) Line numbers (L/Ns) 959 and earlier on which the actions specified in Boeing Service Bulletin 777-38-0042 have been accomplished.

(2) L/Ns 960 through L/N 1689 inclusive.

Note 1 to paragraph (g): Guidance on deactivating the potable water system can be found in Boeing 777 Aircraft Maintenance Manual (AMM) Task 38-10-00-040-801.

**(h) Retained Installation Prohibition, with No Changes**

This paragraph restates the requirements of paragraph (h) of AD 2021-06-03, with no changes. For airplanes not identified in paragraph (g) of this AD: As of March 5, 2021 (the effective date of AD 2021-06-03), accomplishment of the actions specified in Boeing Service Bulletin 777-38-0042 is prohibited.

**(i) Retained Reporting Provisions, with No Changes**

This paragraph restates the requirements of paragraph (i) of AD 2021-06-03, with no changes. Although Boeing MOM-MOM-21-0089-01B specifies to report inspection findings, this AD does not require any report.

**(j) New Required Actions**

Except as specified by paragraph (k) of this AD: At the applicable times specified in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021.

Note 1 to paragraph (j): Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin 777-38A0048, dated October 18, 2021, which is referred to in Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021.

**(k) Exceptions to Service Information Specifications**

Where the Compliance Time columns of the tables in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021, use the phrase “the Original Issue date of Requirements Bulletin 777-38A0048 RB,” this AD requires using “the effective date of this AD.”

**(l) Optional Action for Deactivation of Potable Water System**

Accomplishment of the installation of a shroud around the water supply line and gray water line at station (STA) 529 to STA 634 in the forward cargo compartment, and a shroud around the water return line at STA 550 to STA 620 in the forward cargo compartment, as specified in the Accomplishment Instructions of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, terminates the potable water system deactivation required by paragraph (g) of this AD, provided the conditions specified in paragraphs (l)(1) and (2) of this AD are met.

(1) Repetitive inspections and applicable corrective actions are done at the applicable times specified in Table 1 and Table 2 of paragraph 1.E, “Compliance,” of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021, and in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021.

(2) The potable water system is deactivated in accordance with Boeing MOM-MOM-21-0089-01B, within 42 months after March 30, 2021 (the issue date of Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021).

**(m) Terminating Action for Deactivation of Potable Water System**

Accomplishment of the required actions specified in the Accomplishment Instructions of Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021, terminates the potable water system deactivation required by paragraph (g) of this AD.

**(n) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (o) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing

Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved for AD 2021-06-03 are approved as AMOCs for the corresponding provisions of this AD.

**(o) Related Information**

For more information about this AD, contact Courtney Tuck, Aerospace Engineer, Cabin Safety and Environmental Systems Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3986; email: Courtney.K.Tuck@faa.gov.

**(p) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) Boeing Alert Service Bulletin 777-38A0047, dated March 30, 2021.

(ii) Boeing Alert Requirements Bulletin 777-38A0048 RB, dated October 18, 2021.

(4) The following service information was approved for IBR on March 5, 2021 (86 FR 12809, March 5, 2021).

(i) Boeing Multi Operator Message MOM-MOM-21-0089-01B, dated February 26, 2021.

(ii) [Reserved]

(5) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; website [myboeingfleet.com](http://myboeingfleet.com).

(6) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html).

Issued on November 1, 2022.

Christina Underwood, Acting Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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